

AF/1742



Atty. Dkt. No. 017447-0171

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Applicant: Tomohisa ARAI et al.  
Title: GIANT MAGNETOSTRICTIVE MATERIAL  
AND MANUFACTURING METHOD  
THEREOF, AND MAGNETOSTRICTIVE  
ACTUATOR AND MAGNETOSTRICTIVE  
SENSOR THEREWITH

RECEIVED  
NOV 17 2003  
TC 1700

Appl. No.: 09/779,435

Filing Date: 02/09/2001

Examiner: J. Sheehan

Art Unit: 1742

AMENDMENT AND REPLY UNDER 37 CFR 1.116

Mail Stop AF  
Commissioner for Patents  
PO Box 1450  
Alexandria, Virginia 22313-1450

Sir:

This communication is responsive to the Final Office Action dated August 11, 2003, concerning the above-referenced patent application.

**Amendments to the Claims** are reflected in the listing of claims which begins on page 2 of this document.

**Remarks/Arguments** begin on page 8 of this document.

Please amend the application as follows:

Do  
Not  
Enter  
8/21  
11-25-2003

**Amendments to the Claims:**

This listing of claims will replace all prior versions, and listings, of claims in the application:

**Listing of Claims:**

1. (Currently Amended) Giant magnetostrictive material whose dimensions vary at an application of an external magnetic field thereon, comprising:

a mother alloy consisting essentially of a rare earth element and a transition element metal and having a composition represented by the formula:



wherein R denotes at least one element selected from rare earth elements including Y,  
wherein T denotes at least one element selected from the group consisting of Fe, Co and Ni,  
wherein M denotes at least one element selected from transition elements other than Fe, Co  
and Ni, and wherein X and Z are numbers satisfying  $0.5 \leq X \leq 1$  and  $1.4 \leq Z \leq 2.5$ ,  
respectively; and

nitrogen contained in the mother alloy;

wherein the nitrogen comprises an interstitial nitrogen interstitially dissolved in the mother alloy and a nitride-forming nitrogen in the mother alloy, a ratio of a content of the nitride-forming nitrogen to a total content of the nitrogen contained in the mother alloy being in the range 0 to 0.05 by mass ratio.

2. (Previously Amended) The giant magnetostrictive material as set forth in claim 1:

wherein the total content of the nitrogen in the mother alloy is in the range from 0.01 to 2.5% by mass.

3. (Previously Amended) The giant magnetostrictive material as set forth in claim 1: